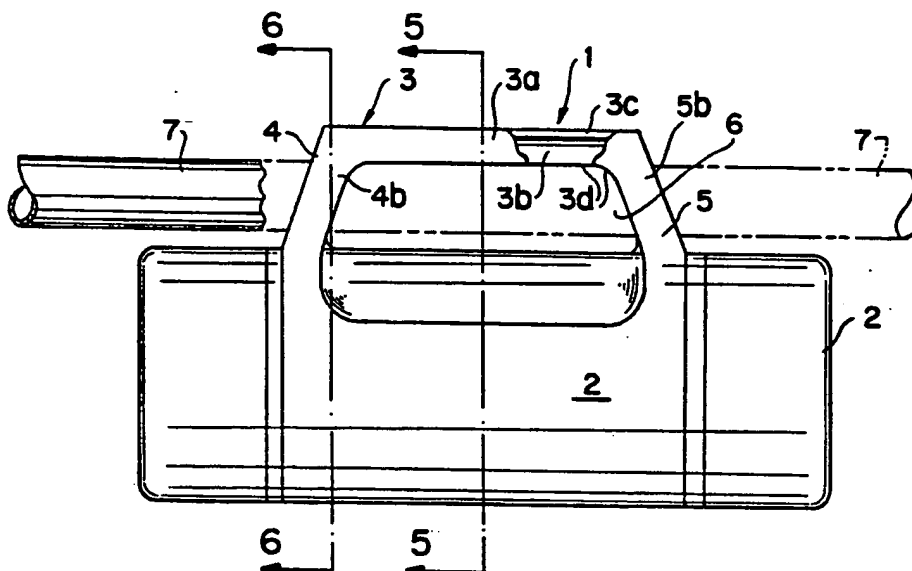


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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>5</sup> :</b> <b>B60R 11/00, B62J 9/00, 11/00</b>	<b>A1</b>	<b>(11) International Publication Number:</b> <b>WO 94/04393</b> <b>(43) International Publication Date:</b> 3 March 1994 (03.03.94)
<b>(21) International Application Number:</b> PCT/US93/07627 <b>(22) International Filing Date:</b> 17 August 1993 (17.08.93)  <b>(30) Priority data:</b> 07/930,782 17 August 1992 (17.08.92) US  <b>(71)(72) Applicant and Inventor:</b> KOCH, Henry, William, III [US/US]; 52 Van Sicklen Road, Williston, VT 05495 (US).  <b>(74) Agent:</b> BRADY, Rupert, J.; Brady, O'Boyle & Gates, 5530 Wisconsin Avenue, Suite 714, Chevy Chase, MD 20815-4388 (US).  <b>(81) Designated States:</b> AU, CA, JP, KR, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).		<b>Published</b> <i>With international search report.</i>

**(54) Title:** COMBINED HANDLE AND FRICTION CONNECTOR FOR CONTAINERS AND THE LIKE**(57) Abstract**

A combined handle and friction connector for a container in which a handle assembly (1) can either be integral with a container (2, 13, 14, 19, 22) or attachable (8) thereto. The handle (3) is spaced from the container by an opening (6) for receiving the hand of the user, and has a snap-on groove (3d, 4a, 5a) for detachably connecting the handle (3) and the associated container to a tubular support having a range of varying diameters, such as, a bicycle frame (7), a boat railing (12), a lawn mower (17), a broom handle (24), or the like (21). The handle assembly (1) performs the dual function of a snap-on connector, and as a handle (3) to facilitate the carrying of the container after being removed from the tubular support.

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COMBINED HANDLE AND FRICTION CONNECTOR FOR  
CONTAINERS AND THE LIKE

Background of The Invention -

5 Various snap-on friction connectors have been provided for attachably connecting a container to a tubular member, such as a bicycle frame. Such connectors can either be integral with the container as disclosed in U.S. Patents 596,998; 3,920,140; and 5,024,358; or as a separate connector as disclosed in U.S. Patent 4,334,642.

10 While these connectors have been satisfactory for their intended purpose, their only function was to connect the container to the bicycle frame.

After considerable research and experimentation, the snap-on friction connector of the present invention has  
15 been devised, wherein the connector is an integral part of a handle assembly by which the container may be carried when not mounted on a tubular member.

Summary of The Invention -

20 The combined handle and friction connector of the present invention comprises, essentially, a handle assembly which can be either integral with a container or as an attachment detachably connected to a container. The handle extends outwardly from the container and parallel to the longitudinal axis of the container. The handle includes a  
25 longitudinally extending portion having a snap-on groove formed therein, and at least one bridge portion connecting the longitudinal portion to the container or attachment.

By the construction and arrangement of the device of the present invention, the connector performs the dual  
30 function of a snap-on connector and as a handle to facilitate the carrying of the container after being removed from a tubular support.

The combined handle and friction connector is readily adaptable for supporting various types of containers on  
35 various types of tubular supports within a range of diameters, such as, but not limited to, a Thermos ®

container, lunch box, tool kit, radio or tape player, flashlight, utility container, or drink container on a bicycle frame; a utility container or drink container on a boat railing, or rail on exercise machines, hospital beds, walkers for disabled persons, infant strollers (i.e. baby bottle), or beach chairs; a tool box, drink container or gas container on the tubular handle frame of a lawn mower, a drink container or utility container for extra line or fuel on a lawn trimmer; or a container for a janitorial supplies container attached to the handle of a push broom, squeegee, mop, or the like.

Brief Description of The Drawings -

Figure 1 is a diagrammatic view of one embodiment of the invention showing the combined handle and friction connector mounting a Thermos or other type container on the tubular frame of a bicycle;

Figure 2 is an enlarged, fragmentary, side elevational view of the embodiment shown in Fig. 1;

Figure 3 is an end elevational view of the embodiment shown in Fig. 2;

Figure 4 is a top plan view of the embodiment shown in Fig. 2;

Figure 5 is a cross-section view taken substantially along line 5-5 of Fig. 2;

Figure 6 is a cross-section view taken substantially along line 6-6 of Fig. 2;

Figure 7 is a diagrammatic view showing the combined handle and friction connector of the present invention detachably connecting a container to the tubular railing of a boat;

Figure 8 is a perspective view of an another embodiment of the invention wherein the combined handle and friction connector are constructed as an attachment for a container;

Figure 9 is a perspective view of the embodiment of Fig. 8 showing the interior side of the attachment;

Figure 10 is an end elevational view showing the attachment of Figs. 8 and 9 connected to a container shown in phantom lines;

5 Figure 11 is a diagrammatic view of the combined handle and friction connector of the present invention integral with the lid of a tool box mounted on the tubular handle frame of a lawn mower;

Figure 12 is a top plan view of the handle and friction connector on the tool box illustrated in Fig. 11;

10 Figure 13 is an end elevational view of the tool box and associated handle and connector shown in Fig. 12;

Figure 14 is a side elevational view of the combined handle and connector of the present invention integral with a container for liquids or the like;

15 Figure 15 is an end elevational view of the embodiment shown in Fig. 14;

Figure 16 is a cross-sectional view taken substantially along line 16-16 of Fig. 14;

20 Figure 17 is a top plan view of the embodiment shown in Figure 14;

Figure 18 is a side elevational view of yet another embodiment of the invention wherein the combined handle and friction connector is integrally connected to the container in a cantilevered manner;

25 Figure 19 is a diagrammatic view showing the embodiment of Fig. 18 connected to the handle of a push broom;

Figure 20 is a top plan view of the embodiment shown in Fig. 18;

30 Figure 21 is a cross-sectional view taken substantially along line 21-21 of Fig. 18;; and

Figure 22 is a cross-sectional view taken substantially along line 22-22 of Fig. 18.

Description of The Preferred Embodiments -

35 Referring to the drawings, and more particularly to Figs. 1 to 6, wherein the first embodiment of the invention

is shown, the combined handle and friction connector 1 is integrally connected to a container 2, such as a Thermos<sup>®</sup> jug, having a screw cap at one or both ends, the outer wall of the container 2 and connector 1 being plastic facilitates the molding of the components as an integral unit. The combined handle and friction connector 1 comprises a portion 3 spaced outwardly from the container 2 and extending parallel to the longitudinal axis of the container. The longitudinally extending member 3 is connected to the container 2 and held in spaced relationship thereto by bridging members 4 and 5 extending between the container and each end of the longitudinal member 3 and formed integral therewith.

The space 6 defined by the member 3, bridging members 4 and 5 as outer surface of the container 2, provides an opening for receiving the hand of the user, whereby the member 3 can be gripped to facilitate carrying the container 2.

As will be seen in Figs. 3 and 6, the bridge members 4 and 5 are bifurcated having a circular recess 4a and 5a at the bight portion of the bifurcation and a pair of resilient arms 4b, 5b. The upper end portions of the resilient arms 4b, 5b are provided with sloped surfaces 4c, 5c to facilitate the camming insertion of the combined handle and connector 1 onto a tubular support 7 having a diameter within a certain range.

As will be seen in Figs. 1 and 5, the longitudinally extending member 3 comprises a pair of spaced, parallel arms 3a and 3b having sloped surfaces 3c at the upper end thereof to facilitate insertion of the tubular support 7, and an inwardly extending lip portion 3d at the lower end thereof to hold the tubular support 7 in the space 6.

In using the combined handle and friction connector 1 of the embodiment shown in Figs. 1 to 6, if the support tube 7 is considered part of the tubular frame of a bicycle, as shown in Fig. 1, the container 2 is placed

underneath the tube 7, with the combined handle and friction connector 1 positioned facing upwardly, as shown. The container is merely pushed upwardly to snap the tubular frame 7 into the bifurcated bridging members 4 and 5 and under the longitudinally extending lip portions 3d of arms 3a and 3b. During this friction connection snap action the sloping surfaces 3c, 4c and 5c engaging the tube 7 cam and flex the pairs of resilient arms 4b and 5b, and the parallel arms 3a, 3b outwardly, as shown in phantom lines in Figs. 5 and 6, allowing the tube to snap beneath the lip portions 3d, to thus be frictionally engaged by the handle. Tube 7 is released by the handle merely by pulling on the container in a direction away from the tube 7, which causes the tube to cam and flex the resilient arms 4b and 5b, and the parallel arms 3a, 3b apart, by engagement with lip portions 3d. Typically, one size of the combined handle and friction connector 1 can be constructed to receive tubular support members 7 therein having diameters in the range, for example, of seven-eighth of an inch to one-and-one-eighth inches. Tubular framing on lawn mower handles and on boat rails are generally approximately seven-eighth of an inch in diameter, whereas tubular framing on bicycles generally have diameters in the range of one inch to one-and-one-eighth inches. A larger version of the combined handle and friction connector 1 can be constructed for receiving tubular supports of larger diameters, such as in the diameter range of one-and-one-half inches to one-and-three-quarter inches.

At the bottom of circular recesses 4a and 5a in bridge members 4 and 5, shallow longitudinally extending grooves 20 are provided for housing a bicycle cable, or the like, extending along the bottom of tubular support 7 of a bicycle frame, so that the tubular support 7 can be completely frictionally inserted into the circular recesses 4a and 5a, so that the diameter of the tubular support is below the gripping portions or inwardly extending lip

portions 3d of the parallel arms 3a and 3b. Grooves 20 can be omitted from certain combined handle and friction connectors of the invention when there is no need for providing recesses for a cable or the like, or if it is not intended for use on a bicycle frame, etc.

Figs. 8, 9 and 10 illustrate another embodiment of the invention wherein in lieu of forming the combined handle and friction connector 1 integral with a container as shown in Figs. 1 to 6, the combined handle and friction connector 1 is constructed and arranged as an attachment to be detachably connected to a drink container, utility container, or the like. To this end, the combined handle and friction connector 1 are integral with a semi-cylindrical base member 8 having a pair of straps 9 connected at one end thereto, and provided with suitable fasteners 10, such as Velcro, on the side opposite the strap connections and on the mating free ends of the straps, whereby the combined handle and friction connector can be detachably connected to a container 11 and the assembly can be snapped onto a tubular support such as the bicycle frame 7 shown in Fig. 1, or a railing 12 of a boat as shown in Fig. 7, or some other tubular member. The pair of connector straps 9 have been shown as flexible material straps with Velcro fasteners, but it is to be understood that they can be other type of adjustable and releasable plastic strapping, or may be friction clips to hold a container to the base member 8.

Figures 11, 12 and 13 illustrate another application of the combined handle and friction connector 1 integrally connected to the lid 13 of a plastic utility or tool box 14, the lid being hingedly connected to the box as at 15 and a lid latch being provided at 16. The box 14 can be snapped onto a tubular support such as the bicycle frame 7 shown in Fig. 1, the horizontal portion of the boat railing 12 shown in Fig. 7, or the tubular frame portion 17 of the handle of a lawn mower 18 shown in Fig. 11.



Figs. 14 to 17 illustrate still another embodiment of the invention, wherein the container portion of the combined handle and friction connector 1 comprises an integral hollow plastic container 19, for liquids or the like, being snapped on a suitable tubular support 21. In this form of the container, the space 6 for receiving the hand of the user is spaced inwardly of the side edge of the container 19, and the tubular support 21 in the frictionally engaged position is contained between the pair of parallel arms 3a and 3b of the longitudinally extending handle member 3, and between the pairs of resilient arms 4b, 5b of the bridge members 4 and 5.

Figs. 18 to 22 illustrate yet still another embodiment of the invention, wherein the longitudinally extending member 3 is connected to the container 22 and held in spaced relationship thereto by the one bridging member 4. The container 22 is shown in the form of an insulated or uninsulated cup for receiving a container 23 of fluid, such as cleaning fluid, or a drink can or bottle, whereby the container cup 22 can be snapped onto tubular member, such as the handle 24 of push broom 25, as shown in Fig. 19. As will be seen in Fig. 21, the longitudinally extending member 3 is a continuation of the circular recess 4a in the bight portion of the bifurcated pair of resilient arms 4b. The longitudinally extended member 3 to be gripped for carrying the container cup 22 is thus cantilevered along the side of the container cup by single bridging member 4 including the pair of resilient arms 4b. As in the other forms of the invention, the inwardly extending lip portions 3d at the upper end of parallel arms 3a, 3b and resilient arms 4b, below sloping cam surfaces 3c and 4c, respectively, frictionally engage the top portion of the tube 24, or the like, to retain the handle and the attached cup on the tube. When removed from the tube, the cantilevered handle can also serve as a hook or a means of hanging. It easily hangs on a person's belt or waistband.

The terms and expression which have been employed herein are used as terms of description and not of limitation, and there is no intention, in the use of such terms and expressions, of excluding any equivalents of the features shown and described or portions thereof, but it is  
5 recognized that various modifications are possible within the scope of the invention claimed.

I Claim:

1. A combined handle and friction connector for containers comprising, a longitudinally extending member (3) spaced radially outwardly from the container (2, 8, 13, 14, 19, 22) and extending parallel to the longitudinal axis of said container, said longitudinally extending member (3) including a pair of spaced, parallel resilient arms (3a, 3b), at least one bridge member (4, 5) operatively connected between the container and the longitudinally extending member (3) for holding the longitudinally extending member (3) in spaced relationship to said container, the space (6) between said longitudinally extending member (3) and the container providing an opening for receiving the hand of a user, and resilient arms (4b, 5b) provided in the bridge member (4, 5), the pair of spaced parallel, resilient arms (3a, 3b) and the resilient arms (4b, 5b) of the bridge member adapted to receive a selected tubular support member (7, 12, 17, 21, 24), whereby the handle and associate container can be snapped onto the tubular support member.

2. A combined handle and friction connector according to claim 1, wherein a bridge member (4, 5) is integral with each end of the longitudinally extending member (3) and the container (2, 8, 13, 14, 19).

3. A combined handle and friction connector according to claim 1, wherein one end of a bridge member (4, 5) is integral with each end of the longitudinally extending member (3), a semi-cylindrical base member (8), the opposite end of each bridge member (4, 5) being integral with said base member (8), and fastening means (9, 10) mounted on said base member (8) for securing said base member and associated handle and friction connector to a container.

4. A combined handle and friction connector according

to claim 2, wherein the container comprises a sleeve (22) for receiving selective containers (23).

5        5. A combined handle and friction connector according to claim 2, wherein the container comprises a utility box (14) having a hinged cover (13), the combined handle and friction connector being connected to said cover (13).

6. A combined handle and friction connector according to claim 1, wherein the container comprises a cup (22) for receiving selective containers (23).

10       7. A combined handle and friction connector according to claim 1, wherein the tubular support member comprises a selected one of a bicycle frame (7), a boat railing (12), a lawn-mower handle (17), and a broom handle (24).

15       8. A combined handle and friction connector according to claim 1, wherein the bridge member (4, 5) is bifurcated having a circular recess (4a, 5a) at the bight portion thereof and a pair of spaced arms (4b, 5b) extending upwardly therefrom, a sloped surface (4c, 5c) on the upper end portion of each arm to facilitate the insertion of the  
20 combined handle and connector on the tubular support.

25       9. A combined handle and friction connector for containers comprising, a longitudinally extending member (3) spaced radially outwardly from the container (2, 8, 13, 14, 19, 22) and extending parallel to the longitudinal axis of said container, the longitudinally extending member (3) comprising a pair of spaced, parallel, resilient arms (3a, 3b), at least one bridge member (4, 5) operatively connected between the container and the longitudinally  
30 extending member (3) for holding the longitudinally extending member (3) in spaced relationship to said container, the space (6) between said longitudinally extending member and the container providing an opening for receiving the hand of a user, resilient arms (4b, 5b) provided in the bridge member (4, 5), the pair of spaced,  
35 parallel, resilient arms (3a, 3b) and the resilient arms

(4b, 5b) of the bridge member adapted to receive a selected tubular support member (7, 12, 17, 21, 24), and a sloped surface (3c) on the upper end portion of each arm (3a, 3b) of the longitudinally extending member (3) to facilitate the insertion of the tubular support, whereby the handle and associated container can be snapped onto the tubular support member.

10. A combined handle and friction connector according to claim 9, wherein an inwardly extending lip (3d) is provided on each arm (3a, 3b) below the sloped surface (3c) for holding the tubular support in said space (6).

11. A combined handle and friction connector according to claim 9, wherein said bridge member (4, 5) is bifurcated and having a recess (4a, 5a) at the bight portion thereof and a pair of spaced arms (4b, 5b) extending upwardly therefrom and connected to said pair of spaced parallel arms (3a, 3b).

12. A combined handle and friction connector according to claim 11, including a sloped surface (4c, 5c) on the upper end portion of each arm (4b, 5b) of said pair of spaced arms of said bridge member (4, 5), and said sloped surface (4c, 5c) on the upper end portion of each arm being in alignment with the sloped surface (3c) on the upper end portion of each of said parallel arms (3a, 3b) of said longitudinally extending member (3).

13. A combined handle and friction connector according to claim 9, including gripping portions (3d) positioned below said sloped surface (3c) of each parallel arm (3a, 3b) and extending longitudinally thereof, for frictionally engaging a tubular support member.

14. A combined handle and friction connector according to claim 12, in which said gripping portions (3d) comprise inwardly extending lip portions for receiving a tubular support therebetween.

15. A combined handle and friction connector according to claim 12, including gripping portions (3d) positioned below said sloped surface (3c) of each parallel arm (3a, 3b) and below the sloped surface (4c, 5c) on the upper end portion of each arm of said pair of spaced arms (4b, 5b) of said bridge member (4, 5), and extending longitudinally of and substantially coextensive with said parallel arms (3a, 3b) and pair of spaced arms (4b, 5b) of said bridge member.

16. A combined handle and friction connector according to claim 15, in which said gripping portions (3d) comprise inwardly extending lip portions (3d) for frictionally engaging a tubular member therebetween.

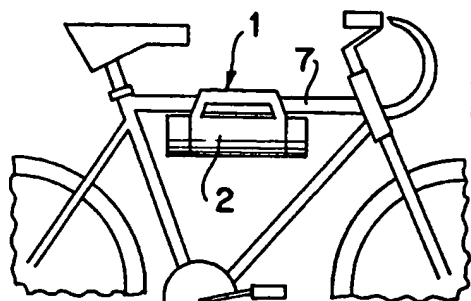


FIG. 1

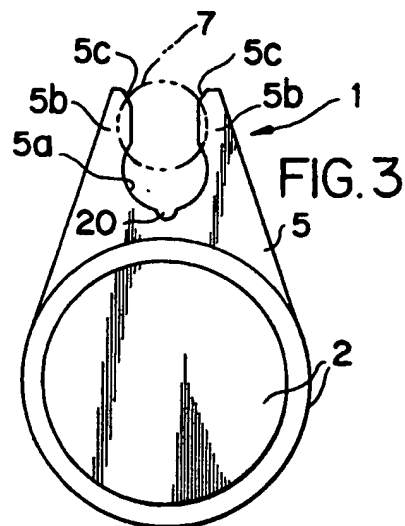


FIG. 3

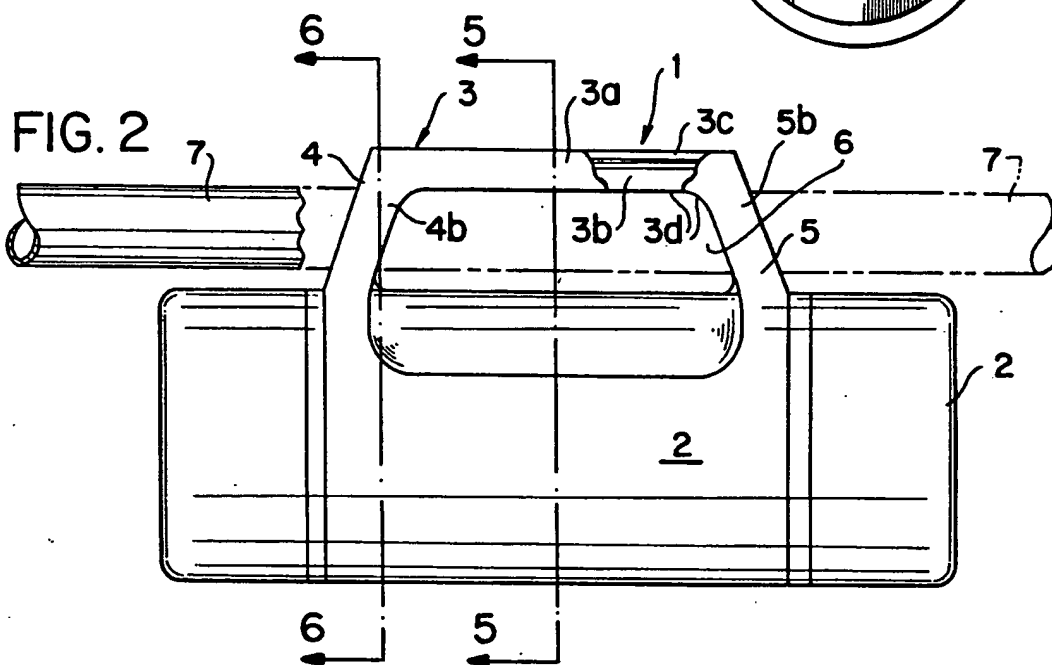


FIG. 2

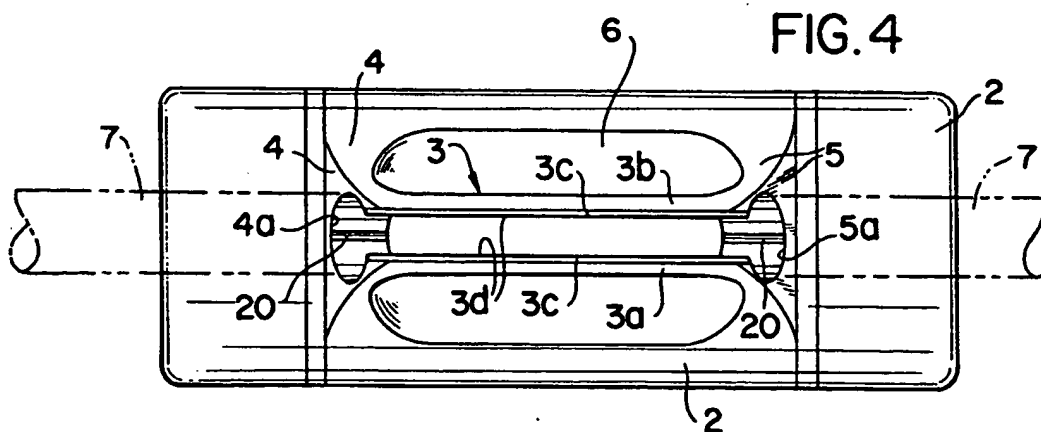
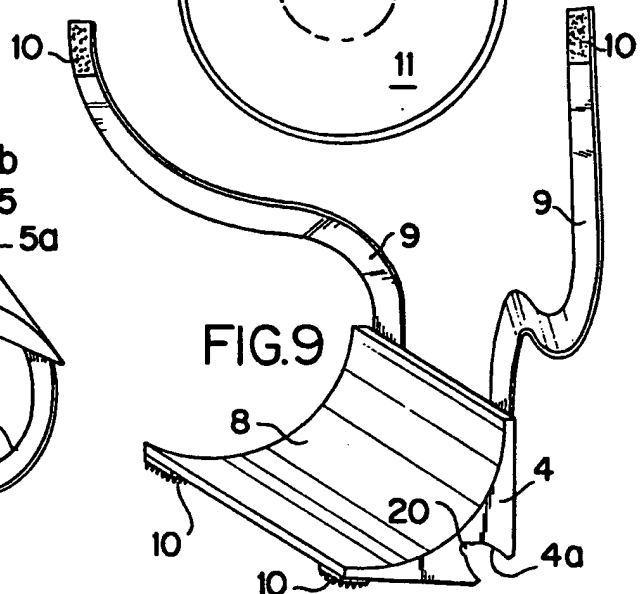
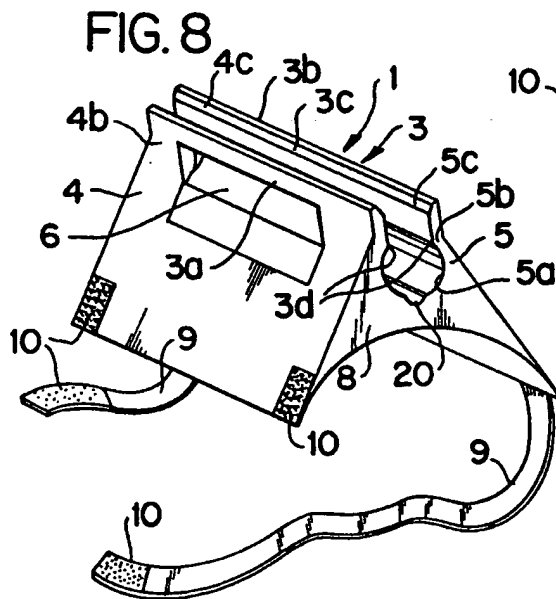
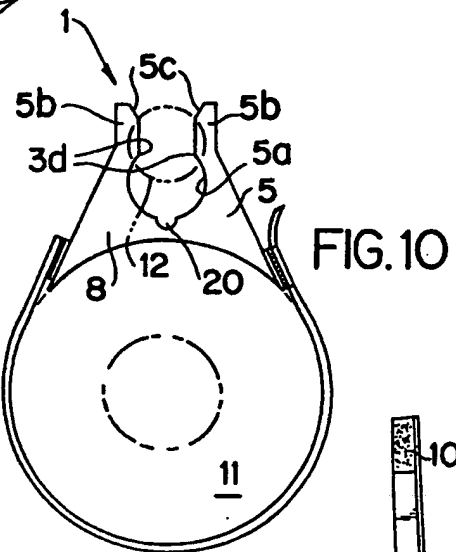
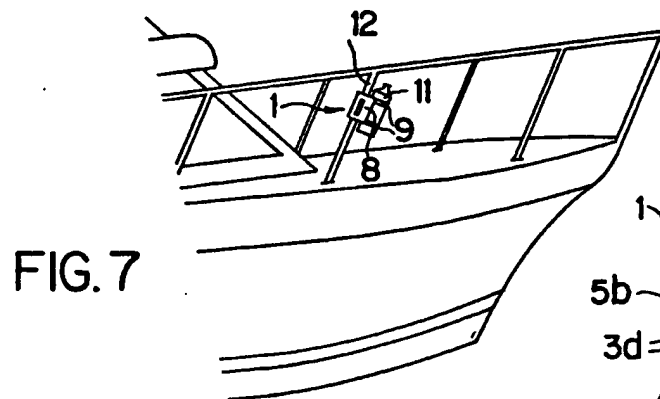
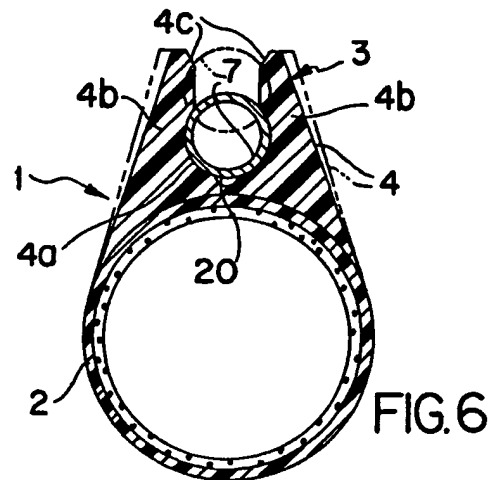
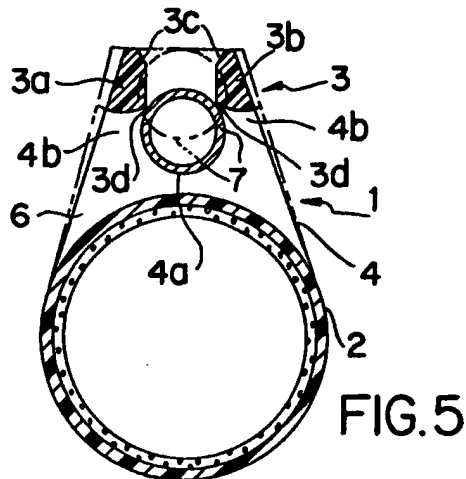


FIG. 4





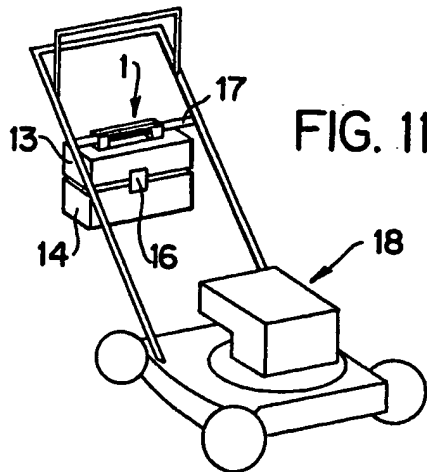


FIG. 11

FIG. 12

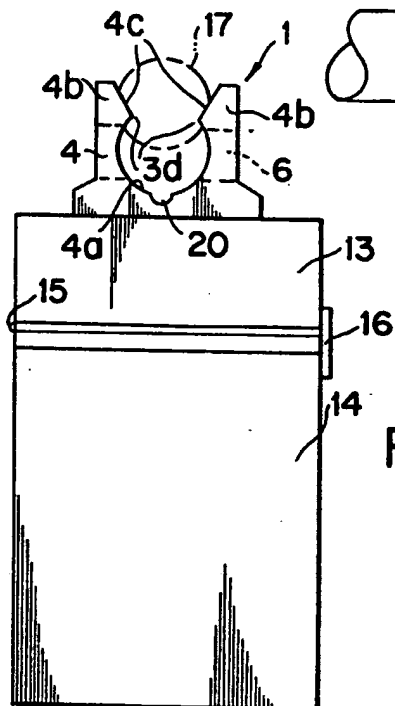
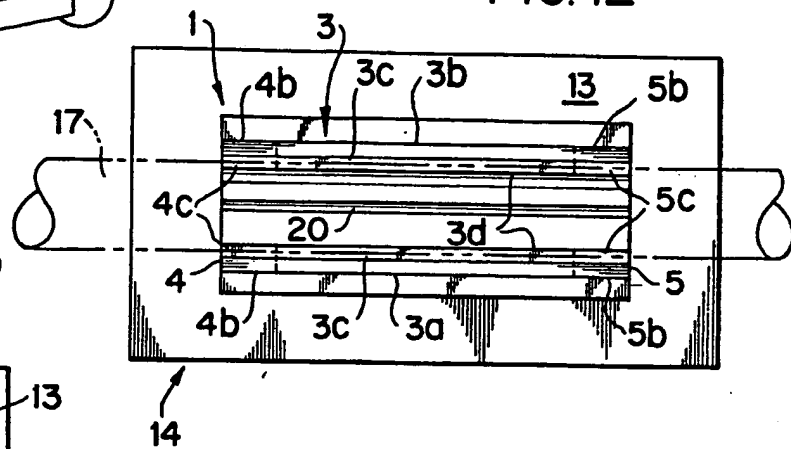


FIG. 13

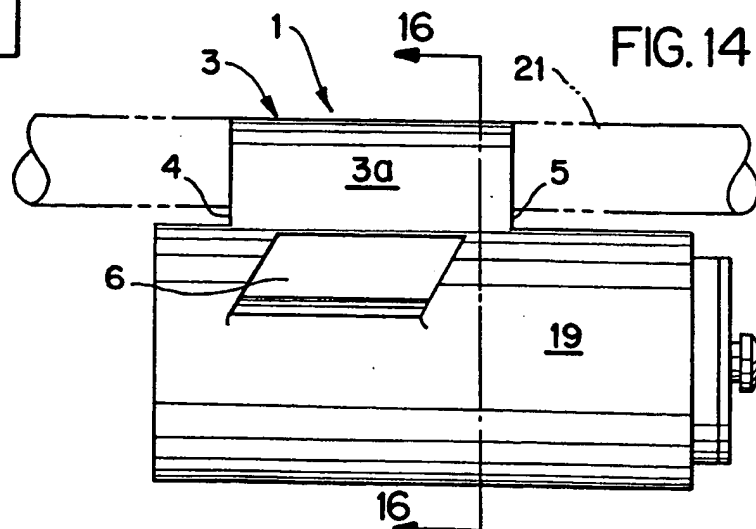
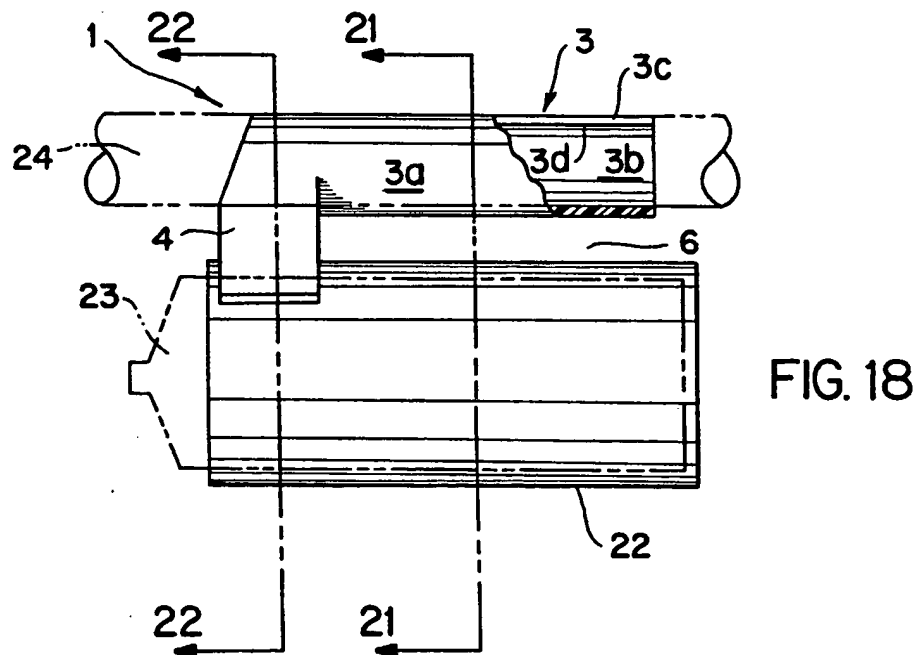
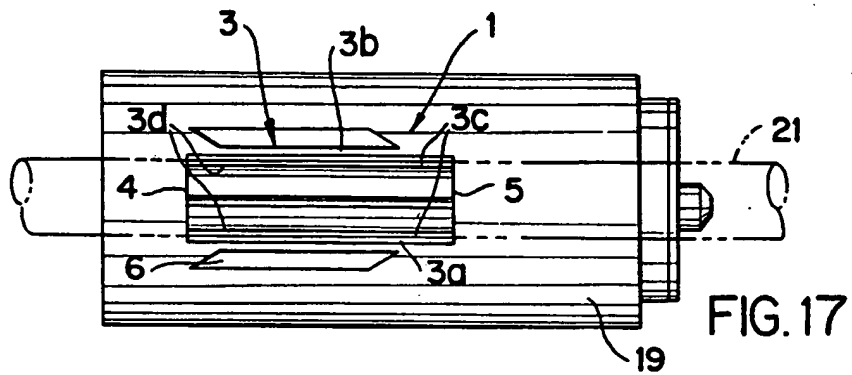
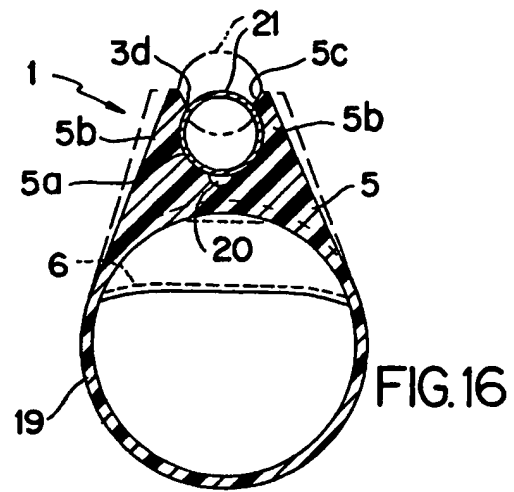
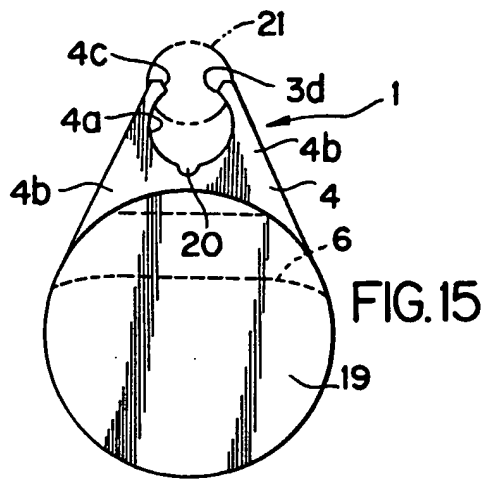
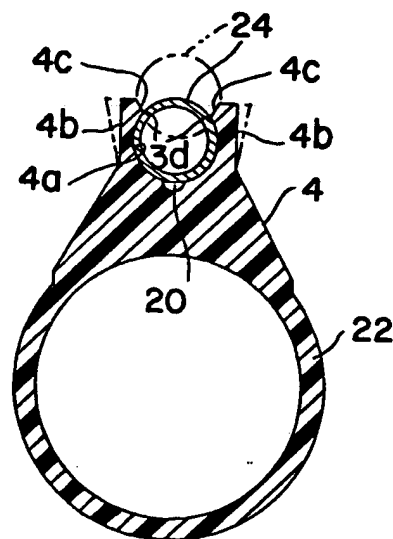
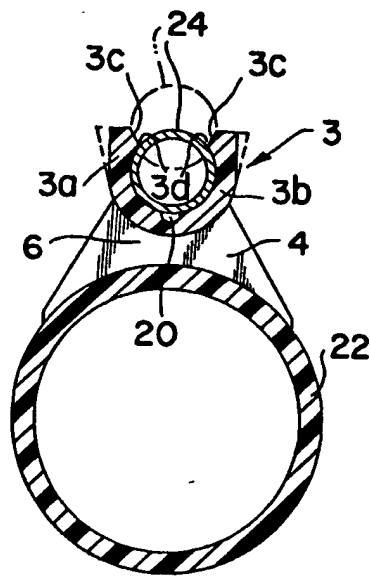
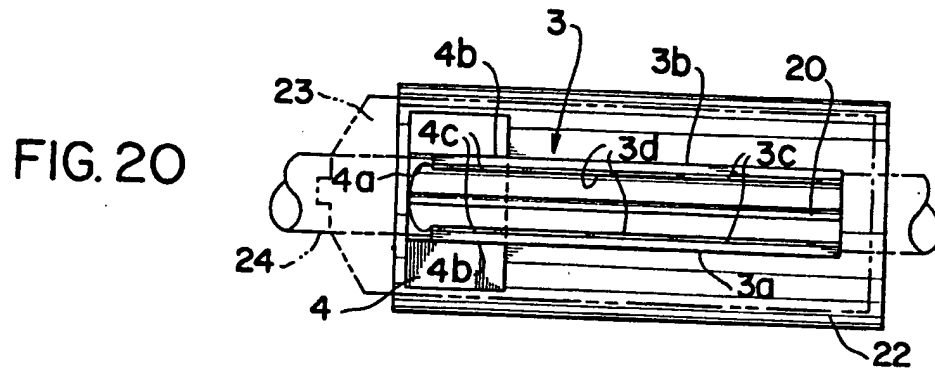
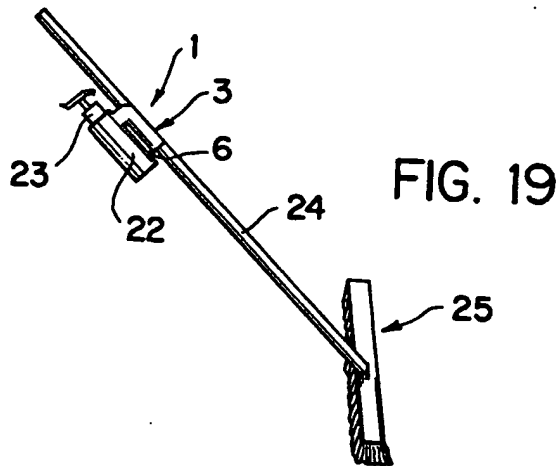


FIG. 14





## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US93/07627

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(5) :B60R 11/00; B62J 9/00, 11/00

US CL :224/35, 32R, 42.46R; 294/141, 149, 152

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : Please See Extra Sheet.

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched


Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 600,238 (Sheppard) 8 March 1898 See the entire document.	1-8
X	US, A, 5,011,055 (Neugent) 30 April 1991 See the entire document.	1-4, 7 and 8
A	US, A, 2,605,945 (Dechar) 5 August 1952 See the entire document.	1-8

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:	*T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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*B* earlier document published on or after the international filing date	*Y*	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
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Date of the actual completion of the international search 05 October 1993	Date of mailing of the international search report 21 OCT 1993
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized Officer  LINDA J. SHOLL
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# INTERNATIONAL SEARCH REPORT

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## B. FIELDS SEARCHED

Minimum documentation searched

Classification System: U.S.

224/35, 32R, 42.46R, 39, 31, 30R; 294/141, 149, 152, 31.2, 157, 142, 156;  
220/756, 751, 771, 759; 215/100A; 248/214, 313, 230, 229